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(54) Title: CODED NUCLEIC ACID CARRIERS

(57) **Abstract:** The present invention relates generally to coded solid or semi-solid nucleic acid carriers for use in multiplexing solid phase nucleic acid-based reactions. The use of coded carriers facilitates multiplexing due to the ability to deconvolute multiple nucleic acid-based events and to correlate these to particular experiments. The present invention further provides a method for identifying a nucleic acid molecule having a defined characteristic within a population of two or more different nucleic acid molecules using coded nucleic acid carriers. Conversely, the nucleic acid can be used as the code for a particular peptide, or other chemical, bound specifically to a microsphere with a specific oligonucleotide sequence. Alternatively, the method of the present invention permits screening for molecules which interact with target nucleic acid, or other, molecules. The method and the coded carriers of the present invention enable high throughput screening of nucleic acid, or other, molecules. The method may also be automated and/or controlled by computer software.

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